REMARKS

Claims 2-31 and 35-49 are pending in the present application. Claims 2-31 and 35-49 stand rejected. Claims 13 and 29 have been objected to by the Examiner. The Examiner has objected to claim 29 on the ground that the entire claim was not present in the amended claims provided on January 21, 2009. Claim 29 was objected to because of improper dependency.

Claim Objections

As noted above, according to paragraph 7 in the Office Action, claim 13 was not complete in the amended claims provided on 1/21/2009. The missing part of the claims can be found in the original claims in (WO 2004/092482). Claim 13 should read as follows:

" A process as defined in claim 12, wherein the weight proportion of inorganic colloidal particles in the total weight of these particles and the pre-treated portion of filler amount is in the range of 0.5 - 20 kg/t (as corrected)."

In paragraph 8 of the Office Action, claim 29 has been objected to as being of improper dependent form. In accordance with U.S. practice, claim 29 has been divided into two dependent claims, one for the option called "identical" and the other for the option called "different".

Thus, the objections have been overcome. Withdrawal thereof is requested.

Claim rejections under 35 USC §112

According to paragraph 10 in the Office Action, claims 8-10, 12-13, 14, 19, 20-21, 23-24, 28-29 and 31 have been rejected under 35 USC 112, second paragraph, as being indefinite for

failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The limitation(s) following the phrases "preferably" and "advantageously" in the claims have been corrected so as to comply with U.S. practice. Dependent claims have been presented to cover the preferred embodiments of the claimed invention.

Claim rejections – 35 USC § 103(a)

According to paragraph 15 in the Office Action, claims 1-4, 6, 8-19, and 21-35 have been rejected under 35 USC 103(a) as being unpatentable over Freeman et al, USP 5,551,975 ('975) in view of Greenwood et al., US Patent Publication No. 2003/0066617 ('617). This rejection is respectfully traversed. Reconsideration and withdrawal thereof are requested.

According to paragraphs 16 to 18 of the Office Action, the Freeman et al patent teaches a process for the manufacture of paper (column 2, lines 45-53), wherein a clay filler is pre-treated with inorganic colloidal particles (liquid colloidal silicas, column 3, line 67) having an average particle size in water of less than 100 nm (7 nm, column 4, lines 9-11) and suspended to form an aqueous slurry (column 4, lines 17-19), the aqueous slurry obtained being combined with an aqueous suspension containing cellulose fibers to form a stock (column 6, line 36). According to the Freeman et al reference, there is no explicit teaching of treating the formed stock at least with a cationic retention agent which is a cationic polymer having a molecular weight of at least 500,000 g/mol, and filtering and drying the treated stock to form said paper.

In the opinion of the Examiner (paragraph 18), the '975 patent teaches the addition of a cationic polymer (preferably cationic starch or polyacrylamide [0026]) that preferably has a

molecular weight of above 2,000,000 [0026] to the stock (components can be added in any order [0028] as a retention agent [0026] for the act of papermaking (abstract). The further papermaking steps of filtering and drying the stock to form paper are well known in the art and are taught by the generic descriptions of papermaking in the background section of the '975 patent (water draining, dewatering on a wire, and drying in a paper machine [0002].

The Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine use of a high molecular weight retention agent in the stock slurry as taught by Greenwood in the Freeman method for the benefit of providing a final paper that contains large retention and strength additives for a stronger paper with less material loss.

The applicant must respectfully disagree. One of ordinary skill in the art at the time of the invention would not have combined the use of a retention agent in the stock slurry as taught by '617 in the '975 method. The reasons are explained in the following:

The '617 document is irrelevant with respect to the present invention. It describes a completely different system of using cationic retention polymers as compared to the present invention. In fact, the '617 reference describes a similar system discussed already in the specification of the present patent application on page 1, line 28 to page 2, line 6. These systems have the typical feature of initial addition of a polymer to the stock containing filler particles and cellulose fibers, the polymer flocculating the finely divided substance contained in the stock, including the filler. The stock is then subjected to shearing forces, which decompose the floccules. This results in decomposed floccules, having on their surface the cationic surface charge generated by the retention polymer. When an anionically charged colloid is added to the

stock, it will gather the decomposed floccules together. As is described in paragraph [0028] of the '617 reference, it is preferred to add the main polymer before a shear stage, which can be selected from pumping, mixing, cleaning, etc., and to add the silica based sol after that shear stage. There is no suggestion for adding cationic retention polymers to a system, where the filler is pretreated before being combined with a cellulose fiber suspension to form a stock. In fact, the main aim of the '617 reference is to provide novel amine-modified silica sols.

The sequence used in the Freeman '617 reference is as follows:

[(filler + fiber + water) + cationic agent] + colloid

whereas the sequence used in the present invention is:

[(colloid + filler + water) + (fiber + water)] + cationic agent.

In the present invention, the filler is first pre-treated with the colloid in water, giving an aqueous slurry of colloid-treated filler. Then, the aqueous slurry is mixed with an aqueous fiber suspension to give a stock. Finally, the stock is treated with the cationic agent before screening. Unlike the prior art process, this specific sequence leads to good filler retention without flock formation.

Having regard to the Freeman reference, the aim of Freeman is to provide an improved group of structured pigments which have optimum pore structures and improved slurry rheology (see column 1, lines 41 to 43). The pigments are reaction products of a clay and colloidal silica (paragraph 3, lines 43 to 45) and have particular utility as paper pigments and paint pigments (see column 3, lines 41 to 43).

The Examiner has referred to Freeman, column 4, lines 17-19, where it is described that treated filler is suspended to form an aqueous slurry, and to column 6, line 36, where it is described that the aqueous slurry obtained is combined with an aqueous suspension containing cellulose fibers to form a stock (column 6, lines 36+). However, between these steps, it is described in the Freeman reference that the clay treated with colloidal silica is dried by introducing the reactant mixture in suspension into a spray drier under conventional spray drying conditions. Preferred conditions include an entrance temperature of about 1100 °F and an exit temperature of about 250 °F (column 4, lines 26 to 31). As a result of the reaction [in a spray drying process] the surface of the clay is modified and the aggregate product comprises clay particles aggregated by layers of silica so as to provide a product having a larger BET surface area than the starting clay material (column 4, lines 38 to 42).

In the Freeman reference, there is thus produced a clay product which can be, for example, blended with other clays in slurry form to enable the preparation of higher solids slurries.

In the present invention, there is no drying step and treatment with high temperatures and a similar reaction cannot happen. In the present invention, the treatment of filler with colloidal material is a one step process that cannot be carried out beforehand as in Freeman.

It should be noted that the Freeman patent does not describe a paper production method which would promote the runability of a paper production process. It is remarkable that Freeman does not contain any results which would indicate better runability, for example, that Freeman does not contain any retention results.

The paper production method of the present invention improves filler retention by filler pre-treatment with inorganic colloidal particles, whose average particle size in water is less than 100 nm. Pre-treatment with an inorganic anionic colloid is particularly advantageous, because it yields special benefits. An anionic colloid covers the filler particles by an anionic charge, so that they flocculate more readily during addition of a cationic retention agent, and reflocculate after any shearing force treatment. Retention improves and the consumption of cationic retention agent will decrease. Since the retention is improved, the water circulation is kept cleaner, there is less fouling of the machine and less flock formation.

Regarding paragraphs 20 to 31 of the Office Action, they relate to preferred embodiments of the unobvious invention of claim 35, see above, and therefore also comply with the provisions of 35 USC 103(a).

According to paragraphs 40 to 42 , claims 5, 7, 20, and 36 were rejected under 35 USC 103(a) as being unpatentable over Freeman et al., USP 5,551,975 ('975) in view of Greenwood et al., US Patent Publication 2003/0066617 ('617), and in further view of Neivandt et al, US Patent Publication No. 2005/0150621 ('621).

Claims 5, 7, 20 are dependent on claim 35 and therefore define preferred embodiments of the unobvious invention as recited in claim 35. The '621 Neivandt reference, allegedly teaching the use of montmorillonite and bentonite [0026] based pretreatment colloids, is in applicant's view irrelevant. As stated above in connection with claim 35, the invention lies in the combination of an initial filler pretreatment and a final stock retention treatment, which is not disclosed in the Neivandt reference.

Paragraphs 48 to 54 of the Office Action relate to the obviousness of claim 36. Claim 36 defines a papermaking process involving the combination of initially pretreating titanium dioxide filler with 1 - 25 nm magnesium silicate and finally improving stock retention with a 500,000 g/mol cationic polymer. Allegedly, Neivandt teaches the use of a magnesium silicate (talc [0024]) for treating fillers. However, it has been shown above that neither Freeman, Greenwood nor Neivandt disclose the claimed combination of initial filler pretreatment and final stock retention treatment. New claim 36 differs from unobvious claim 35 only in that the filler and the pretreatment colloid are specified, and is therefore also unobvious over the references.

It is respectfully submitted that a combination of the Freeman, Greenwood and Neivandt references fails to teach or suggest all of the features of the claimed invention. Therefore, the applicant believes that the amended claims are non-obvious, and respectfully requests that this rejection be withdrawn. Therefore, favorable action is requested.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Raymond C. Stewart, Reg. No. 21,066, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

Dated: October 9, 2009

Respectfully submitted,

By Raymond C. Stewart

Raymond C. Stewart
Registration No.: 21,066
BIRCH, STEWART, KOLASCH & BIRCH, LLP
8110 Gatehouse Road
Suite 100 East
P.O. Box 747
Falls Church, Virginia 22040-0747
(703) 205-8000
Attorney for Applicant